



Ambler Gazette photo — BOB RAINES

Dominic Cantarella and Steve Hoch attach a baseplate to a tower for their makeshift radio station.

Competition attracts amateur radio operators

■ **Competition**, from Page 9

A long wire stretched through the tops of a section of trees. That wire was the high powered antenna allowing the stations to transmit across the country.

Carl Owens and Carmen DeCiccio, members of the club, were working together in a tent listening to Morse code and translating with paper and pencil.

DeCiccio said he and Owens had been up all night translating Morse code. Owens, who was listening to five different patterns of code, said the fun part is picking through what seems like chaos.

"Each one of these different patterns is a different station trying to contact us," Owens said. "The fun part is trying to sort it all out;

there's about five groups talking at once."

DeCiccio said since starting the night before, the two operators had reached as far as Wisconsin, Oregon and Washington State.

Ted Katz, a member of the Phil-Mont club, said the age diversity within the group is extensive.

"Look at the ages; we have amateurs as young as 8 and as old as 90 and we have janitors and rocket scientists, husbands and wives," Katz said. "If you think there isn't a need for amateur radio people in the world, ask the people in south Florida or New Orleans."

Katz said the group is completely self-sufficient. The members do not rely on anyone else but themselves to set up and transmit.

"There's no commercialism

here, we're not dependent on anything but our own power sources," Katz said.

Katz said amateur radio operators translated Morse code in Navy boats in World War II, but the Navy, two years ago, made it policy not to include Morse code operators on its ships. Katz said Morse code is the one form of communication that can get through anywhere.

"When a voice won't make it, Morse code will get through," Katz said.

Richard Moll of Abington has been a member of the group for 51 years.

He said he's been in many situations where radio operators have saved a lot of lives. Moll said he was in East Stroudsburg in 1955 when the Delaware River swelled up and flooded. He said he sat for days in a jail cell for quiet, and coordinated Navy helicopters to find bodies and helpless residents needing rescue.

"Our whole club was active up and down the Delaware and we handled all the health and welfare traffic," Moll said. "A whole trailer park flooded out and we had scout parties out locating emergency areas and bodies and scouting for where the Navy choppers could land."



Associated Press

Gioia Marconi Braga gets a demonstration of a 'ham' radio set from amateur radio operator Perry Blum yesterday at the Franklin Institute.

Marconi's daughter rededicates station

PHILADELPHIA (AP) — Citing her father's special kinship with amateur radio operators, the daughter of radio inventor Guglielmo Marconi helped rededicate a "ham" radio station at the Franklin Institute yesterday.

"He was especially fond of radio amateurs and he always referred to himself as a radio amateur," Gioia Marconi Braga said, describing her father to volunteers who rebuilt radio station W3TKQ.

The station has been on the air since 1952. The latest renovation gives it a 2,000-watt transmitter, computerized satellite connections, hurricane tracking and television equipment.

The ceremonies were broadcast live on amateur television, on a frequency near UHF Channel 57, said volunteer Jinny Haring.

Braga, ushered to the station's 26-foot console for a photo session, looked over its dials, meters and vid-

eo and digital displays.

Speaking to about 100 volunteers from the sponsoring Phil-Mont Mobile Radio Club, Braga praised amateur radio operators for their work in emergencies:

"I'm also told that you socialize with people around the world. That must be great fun," she said.

Master of ceremonies Jacob S. Kovalchek said the station had a proud history but was in need of updating last year.

The station originally went on the air with home-built equipment and volunteers operating it on weekends and holidays. Eventually, paid members of the Franklin Institute staff took turns demonstrating the equipment for museum visitors.

That policy was dropped about a year ago and Kovalchek began the campaign to upgrade the station with thousands of dollars worth of donated equipment and thousands of hours of volunteer time.

MARCH 1967

Robert Cox K3CEE
1411 Medford Road
Wynnewood, Pa.

AMCOM—

Amateur Mobile Communications

The Phil-Mont Mobile Radio Club, Inc. of Philadelphia and vicinity is endeavoring to complete the outfitting of what it considers a communications facility second to none in AMCOM, Amateur Mobile COMmunications. This is being accomplished through the equipping of an independently powered mobile communications trailer, W3RQZ/portable, with its own prime mover also fully equipped to operate as an independent mobile relay station, W3RQZ/mobile.

Photo 1 shows the com-truck, a 1949 International Metro, and the com-trailer made by the Schulte Company in 1953. The truck was obtained from the Township of Springfield, Delaware County, Pennsylvania, as a former bookmobile. It is now painted a bright emergency red, and well-marked as W3RQZ, Mobile Communications Center. It is well-known to Phil-Monters as the "Red Truck." The trailer was purchased from a contractor whose use necessitated minor body repair topped off with Rustoleum silver paint.

The emergency Red Truck contains equipment mainly for 10 meter AM operation, a 60-watt unit with VFO and tunable receiver,

and a 30-watt fixed frequency unit for operation on the club frequency of 29.493 MHz. This unit can be operated at its position or by the driver of the vehicle. AC power can be supplied by an external generator hauled in the truck. DC power is supplied by a 100-ampere Leece-Neville generating system.

Two other operating positions are available for 2 meter and 6 meter Gonset Communicators, with ac and dc power cords installed. The units are not permanently mounted in the truck, but are available from club members at a moment's notice.

Also included are two telephone line inputs for local and common battery lines; 25 watt public address system which operates on 6 Vdc or 110 Vac; automatic change over for lighting from ac to dc; metering of generator voltage, frequency and running time; handi-talkies on 29.493 MHz; galley supplies; vehicle and other tools; and local area maps. Antennas are available for all equipment, and are mounted in positions for minimum interference between bands.

The communications trailer is Phil-Mont's most refined piece of emergency equipment.

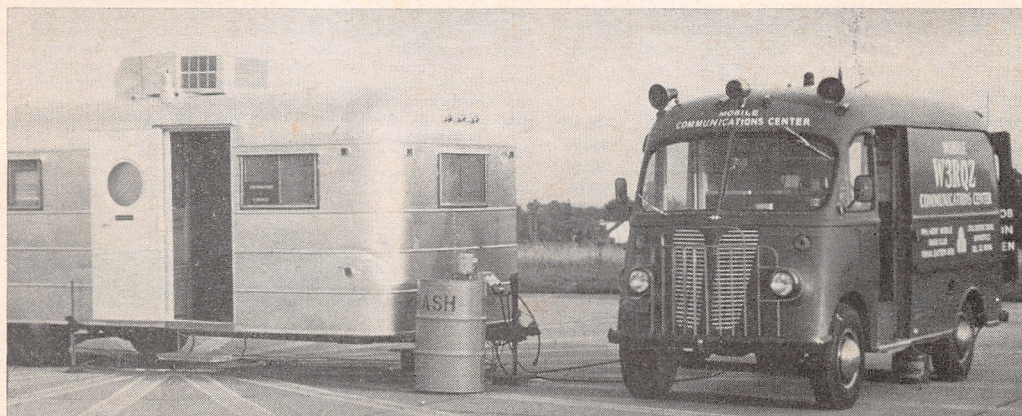


Photo 1. The Phil-Mont mobile communications vehicles. On the left is the communications trailer, and on the right, the Red Truck.

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Kit SB-110, 23 lbs.	\$299.00
Kit HP-13, Mobile Power Supply, 7 lbs.	\$64.95
Kit HP-23, Fixed Station Power Supply, 19 lbs.	\$49.95
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Kit SB-600, SB Series Speaker, 5 lbs.	\$17.95
Kit HS-24, Mobile Speaker, 4 lbs.	\$7.00
HDP-21A, SSB "Ham" Microphone, 4 lbs.	\$29.40

PARTIAL SB-110 SPECIFICATIONS—RECEIVER SECTION: Sensitivity: 0.1 uv for 10 db signal-plus-noise to noise ratio. **Selectivity:** 2.1 kHz @ 6 db down, 5 kHz max. @ 60 db down. **Image rejection:** 50 db or better. **IF rejection:** 50 db or better. **Audio output power:** 1 watt. **AGC characteristics:** Audio output level varies less than 12 db for 50 db change of input signal level (0.5 uv to 150 uv). **TRANSMITTER SECTION:** **DC power input:** SSB, 180 watts PEP; CW, 150 watts. **RF power output:** SSB, 100 watts PEP, CW, 90 watts (50 ohm non-reactive load). **Output impedance:** 50 ohm nominal with not more than 2:1 SWR. **Carrier suppression:** 55 db down from rated output. **Unwanted sideband suppression:** 55 db down from rated output @ 1000 Hz & higher. **Distortion products:** 30 db down from rated PEP output. **Hum & noise:** 40 db or better below rated carrier. **Keying characteristics:** VOX operated from keyed tone using grid-block keying. **GENERAL:** **Frequency coverage:** 49.5 to 54.0 MHz in 500 kHz segments (50.0 to 52.0 MHz with crystals supplied). **Frequency selection:** Built-in LMO or crystal control. **Frequency stability:** Less than 100 Hz drift per hour after 20 minutes warmup under normal ambient conditions. Less than 100 Hz drift for $\pm 10\%$ supply voltage variations. **Dial Accuracy:** Electrical, within 400 Hz on all band segments, after calibration at nearest 100 kHz point. Visual, within 200 Hz. **Dial backlash:** No more than 50 Hz. **Calibration:** Every 100 kHz. **Power requirements:** High voltage, +700 v. DC @ 250 ma with 1% max. ripple. Low voltage, +250 v. DC @ 100 ma with .05% max. ripple. Bias voltage, -115 v. DC @ 10 ma with .5% max. ripple. Filament voltage, 12.6 v. AC/DC @ 4.355 amps. **Dimensions:** 14 $\frac{1}{2}$ " W x 6 $\frac{1}{2}$ " H x 13 $\frac{3}{4}$ " D.



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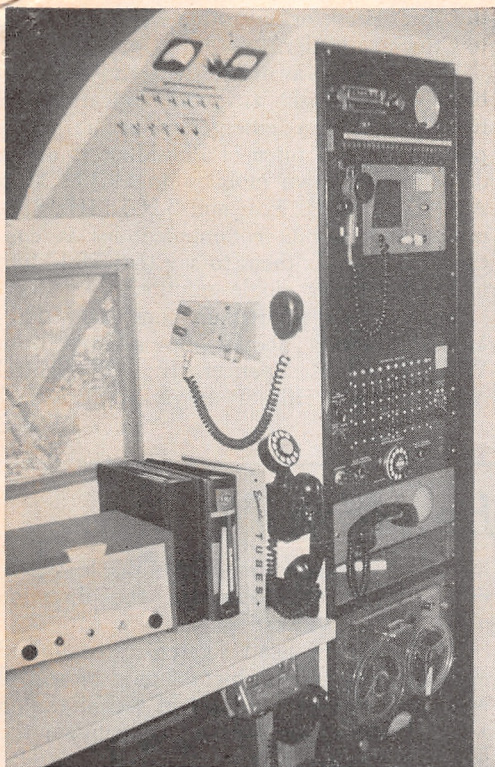


Photo 2. The message center position in the trailer.

Twenty-six feet long, it is divided into an operating area 7' by 14' and a lounge area 7' by 12'.

The operating area walls and ceiling are lined with accoustical tile and are fiber glass insulated. All interiors are white for light reflection, with dark green kick areas. Wall to wall carpeting completes the noise reduction. The lounge area includes a daybed for overnight operators, galley supplies for coffee breaks, and storage cabinets for galley and stationery supplies. The lounge floor is tiled for easy cleaning. Each area has its own door, and eight windows around the trailer provide adequate ventilation when the 1½ ton air-conditioner is not in use.

W3RQZ/portable consists of seven operating positions coordinated by a Message Center Chief. Stationed by the equipment rack at the door between the lounge and operating areas, the Message Center Chief accepts all incoming traffic originating at the portable operating site. He distributes the traffic to the proper operating position for transmission and keeps track of its progress. From his position he has the capability of monitoring, recording or placing on public

address both sides of any or all QSO's in progress. He can also patch any receiver to any push-to-talk transmitter.

On the ceiling to the left of the rack is a power panel which distributes the power to the equipment, lights, and fans. It also provides complete instrumentation of the voltage, current, frequency, and running time of the incoming power.

In the rack, from top to bottom, are: broadcast band monitor; NARCO VGTR-2 for use on aircraft frequencies in emergency situations; message center patching and monitoring equipment; tape recorder; and public address amplifier.

On the side of the rack is a control-head for 6 meter FM with an RCA CMV-3 on 52.525 MHz and a telephone instrument for use with two incoming lines. Seen on and under the table are speakers and controls for several safety service receivers on both high and lowband police and fire frequencies. The binders contain complete schematics for all equipment.

Photo 3 is a view from the message center position toward the rear of the trailer. In it can be seen an SB-33 for 75, 40, and 20 meter sideband; a 6 meter AM unit; and at the 10 meter position on the extreme right, an Elmac AF-67 and PMR-6. Either microphones and earphones or operator headsets are used with floor switches for maximum noise reduction and operating ease.

Not shown is a Gonset Communicator II, modified for push-to-talk, and a Model 15 Teletype for future use on 80 meter and 40 meter FSK or 6 meter and 2 meter AFSK.

Vertical antennas are available permanently attached for all frequencies but those below 14 MHz. For such frequencies coil-loaded mobile whips or portable wire-antennas are used.

Before the acquisition of the com-trailer,

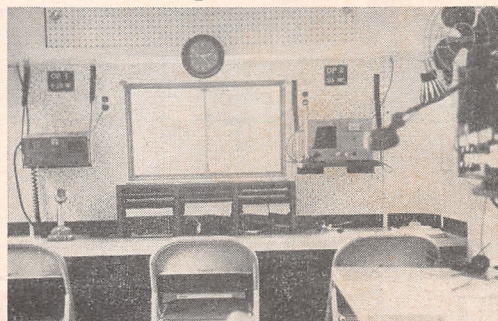


Photo 3. View toward trailer rear from the message center position.

Phil-Mont hauled portable power behind the Red Truck in a generator trailer constructed by club members. This trailer houses a 3 kW-110 volt Onan generator, Model W2C, water-cooled, two cylinder-four cycle, with electric start and ignition. The generator trailer is completely enclosed and has louvered access doors; power cords, junction boxes, jacks, wheel chocks, gas cans, and a power distribution panel complete the installation. This unit is up for sale, but is hauled by other vehicles for present communications projects in the absence of a new Onan Model 305CCCK, to be purchased by the club when funds permit. The new Onan will use propane as fuel and will be stored in

the Red Truck or any other vehicle used to tow the com-trailer.

Phil-Mont is available with its two vehicles to undertake any communications activity, be it an emergency or a routine project. With a force of Phil-Monters active daily in their own mobiles on 29.493 MHz AM, 52.525 MHz FM, and 3.995 MHz SSB, practice in mobile communications is continual, and leads them to say that Phil-Mont is ready "every single minute."

Inquiries on particulars concerning Phil-Mont's vehicles should be addressed to W3QQH, C. R. Spencer, Jr., 124 Central Avenue, North Hills, Pennsylvania 19038.

. . . K3CEE

Improving the Ham M

I am of the firm opinion that the Ham-M is the finest commercial rotator made . . . mechanically. It is very ruggedly built and, when properly installed, will not be the limiting factor, strength-wise, in any reasonable antenna installation.

My complaint is with the direction indicating circuit. The meter in the control box is calibrated in 5° increments. And the signal which the meter measures is the output of a low impedance voltage divider consisting of a wire-wound pot located in the rotor housing. What could be more accurate?

The catch is simply that the bridge is driven by a dc voltage which is rectified from the ac line through a transformer and is directly proportional to it. What this means is that on a cold day when everyone is using their electric heaters, causing the line voltage to drop, my meter says that the antenna is pointed more to the west than on a "warm" day. Or, since I have poor

line voltage regulation in the shack, whenever I talk the linear up, the direction meter dips to the west.

A moment of head scratching convinced me that this nasty problem should be solved with only the most advanced techniques: a zener diode was called for, to regulate the indicator supply.

A zener diode, you may recall, is the solid-state design engineer's answer to the VR tube. These little gadgets can regulate a voltage with a dynamic impedance of as low as 1Ω or less, far better than a VR tube. They come in lower voltages and a wider range, too. And this is the turning point of the story.

The cover of the control box was removed, the zener diode and the three new parts shown in Fig. 1 were installed and the cover was replaced. A word of caution is in order about the installation of the zener diode. It should be connected "backward", that is, with the cathode wired to the positive line. Connecting the diode incorrectly can not harm anything. The only result will be that the output voltage will be less than a volt instead of 16 volts. The usual caution should be exercised with the electrolytic capacitor.

The results have been most satisfactory. During more than eighteen months of operation, the full scale voltage of the bridge has been checked periodically and found to be right on the nose. And even better—when I talk the linear up, the direction meter doesn't budge a bit.

. . . Galen Tustison WB6FGT

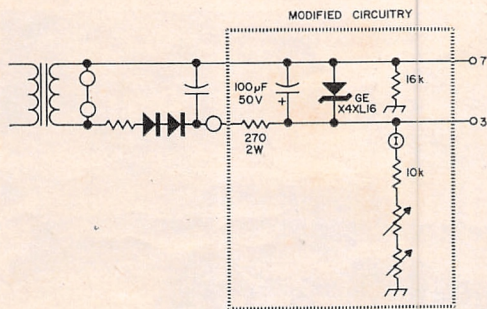
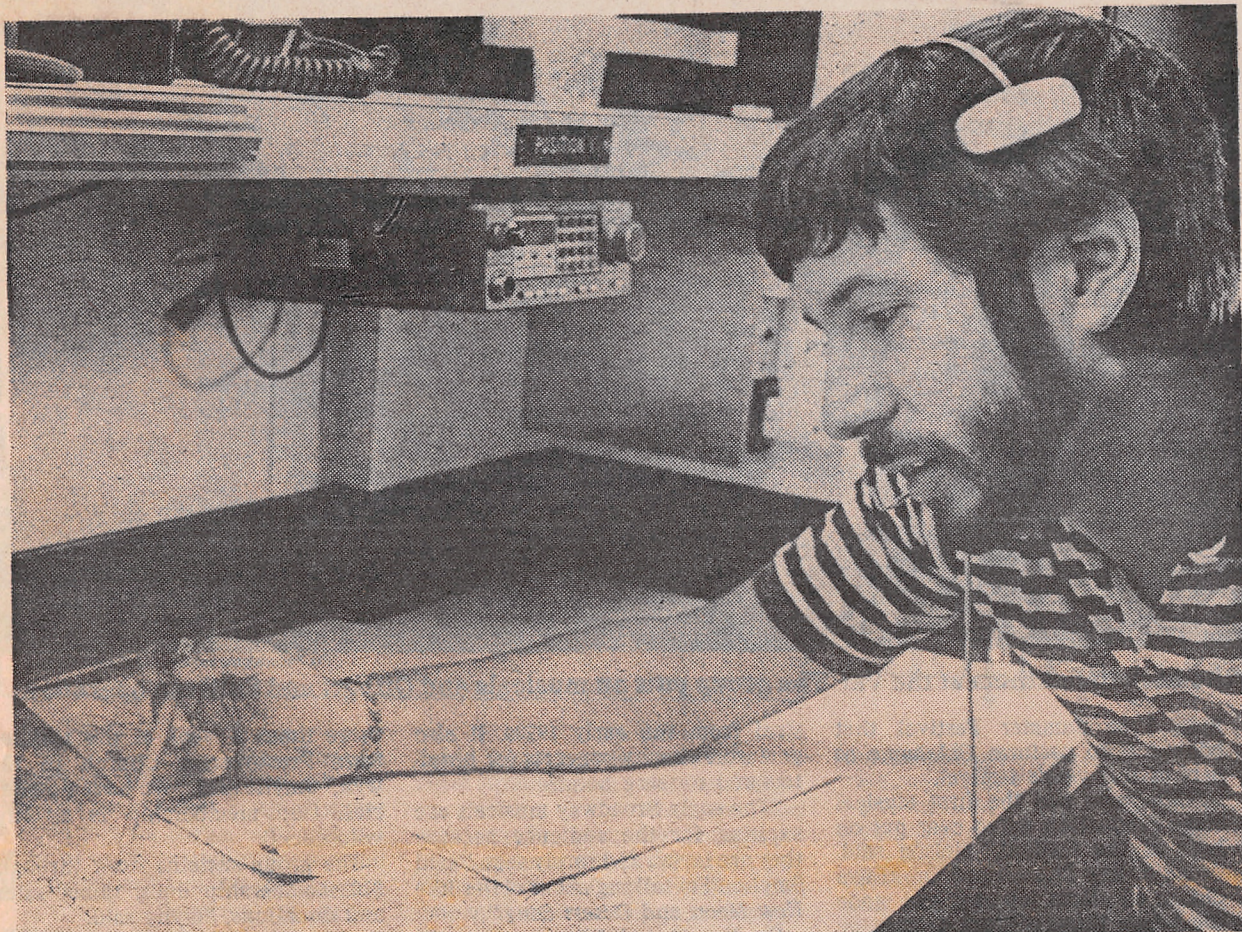


Fig. 1. Circuit of the Ham M control box as modified for constant directional readings.

LIVING

Licensed amateur radio operators can receive at least five words per minute in Morse code, know the laws and regulations governing hams, and have mastered enough technical information to operate radios properly.



Neil Halin finds the location of a radio call on a map in the communications van at the Hamfest.



Special to The Inquirer / LAURENCE KESTERSON

Bob Josuweit has talked to radio operators in 110 countries.

Radio operators make waves at Hamfest

By Dan Hardy
Special to The Inquirer

Dave Wittman of Wallingford communicates with people all over the United States by Morse code, tapping out 20 words per minute, and decoding dots and dashes from those who answer his signal.

John Bartholomew of Broomall belongs to a 700-member radio network that requires each new member to make a full-throated rooster call.

Vic Tenaglia of Yeadon speaks to others around the world by means of state-of-the-art computer-generated digital electronic bursts and often sends his transmissions to satellites that relay them halfway across the world.

And Bob Josuweit of Havertown has talked to other radio operators in 110 countries on five continents.

These four amateur radio operators are among the 200 or so who live in Delaware County. And on Sunday, they joined more than 1,000 other hams, as they call themselves, to trade information, meet each other and buy new equipment.

The occasion was the annual Hamfest in Warminster, Bucks County, sponsored by the Mid-Atlantic Radio Club.

The amateur radio enthusiasts came mainly from Philadelphia and its suburbs.

"This is a chance to meet the faces behind the voices which we hear all the time over our radio sets," said Bartholomew.

Amateur radio, according to the hams, is as old as Guglielmo Marconi, the Italian inventor who in 1901 turned a laboratory curiosity into



A close-up of a Rooster net T-shirt.

the dawn of a new age when he transmitted messages across the Atlantic by radio.

But it is as new as communications satellites and computers, both of which now play a role in many hams' lives.

About 450,000 Americans are licensed amateur radio operators, according to Kay Craigie, eastern Pennsylvania section manager of the American Radio Relay League, an amateur ra-

dio service organization.

That means that they can receive at least five words per minute in Morse code, know the laws and regulations governing hams, and have mastered enough technical information concerning radios that they can operate radios properly.

Once operators obtain a license, there is a variety of activities they can do.

Many hams still enjoy the challenge of using Morse code instead of voice transmission and reception. Those with inexpensive, low-powered equipment prefer to send and receive in Morse code because their reception is better than if they were using voice transmission.

One of the oldest — and still one of the most popular — amateur radio pastimes is "DX-ing," which means contacting people over long distances, especially amateurs in other countries.

When hams get a new contact in a faraway place, they often request that a QSL card, confirming the contact, be mailed out. Joining the Century Club, made up of hams who have received QSL cards from more than 100 different countries, is a big event.

Many hams spend a lot of their air time talking on one of the many ham "nets," which are regular meetings by radio that take place at set times and on set frequencies.

One of the most popular nets in this area is the Rooster net, a group of more than 700 people who chat with one another every morning between 6 and 7 a.m., 365 days a year, according to ham operator Bartholomew, who has been on the air with the Roosters for about 10 years.

To join the Roosters, a ham must talk over the net 20 times in a 90-day period, as well as go

through an initiation rite, which, according to Bartholomew, consists of "crowing" on the air twice.

Though hams have diverse interests, they are united in their recognition that "public service is the reason for our existence," according to ham operator Tenaglia, a coordinator for the Amateur Radio Emergency Service, a network of hams in Delaware County who work with county emergency service agencies.

Hams are a key part of the county's emergency planning, participating regularly in drills to test contingency plans for various disasters.

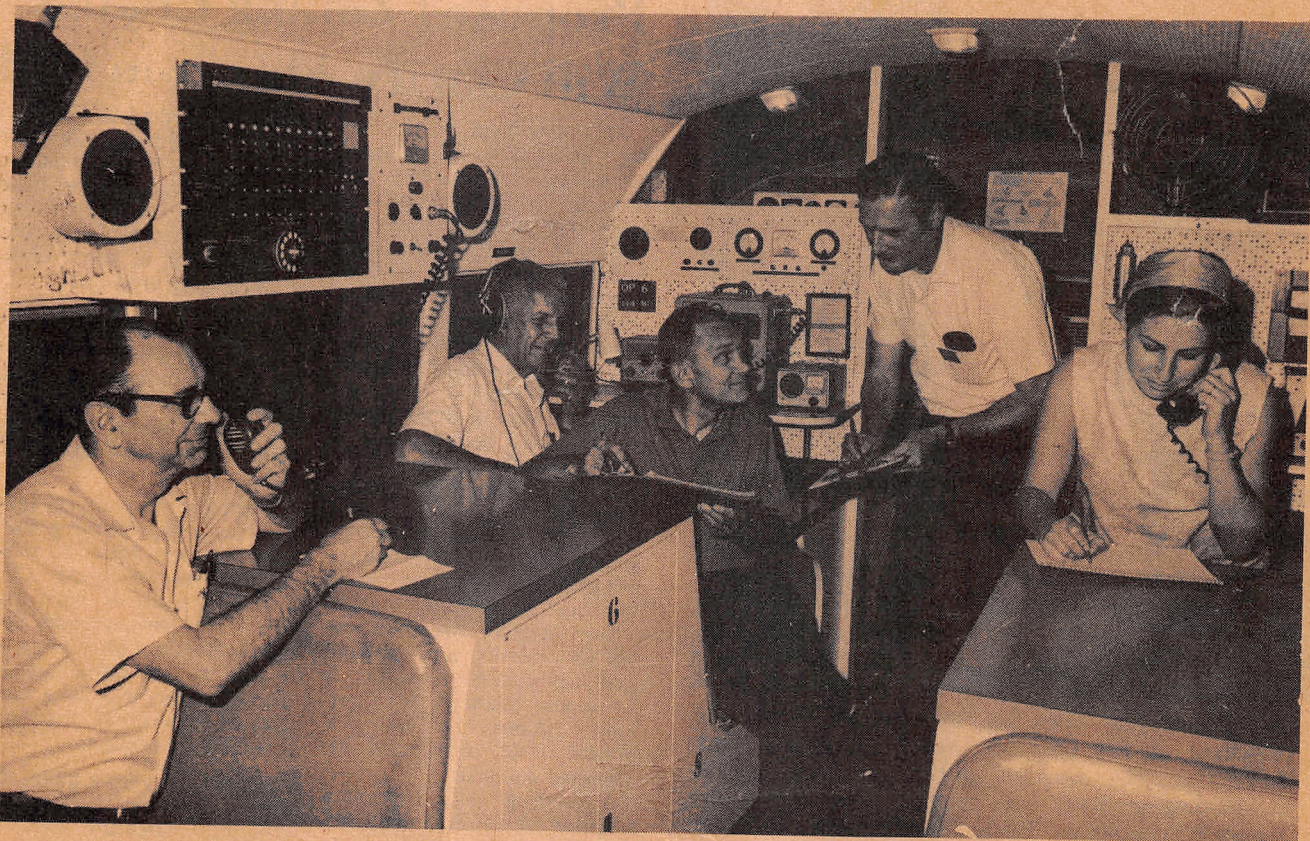
Hams also help out during parades and other events, by keeping officials in touch with one another via battery-powered HTs (hand-talkies).

Amateur radio operators sometimes get started as hams because they work as electronics specialists or computer programmers, but they might also be salespersons, insurance adjusters or 10-year-old children, said Tenaglia.

Hams often volunteer their time to train those who want to get licenses. Vince Bonina, of Glenolden, and Ken Smith, of Ridley Park, have been hams for about 18 months. Now, they are helping others become hams by offering free lessons this fall.

A person can get started as a ham for less than \$100 or spend tens of thousands of dollars on the latest high-tech equipment.

Said Bartholomew: "There are so many things for an amateur radio operator to do these days that if you did them all, you'd be both broke and divorced."



CIVIL DEFENSE DRILL . . . Participating in recent Civil Defense drill in Abington Township using radiological monitoring and communications equipment are (left to right) Michael Chemerys and Dick Braue, communications experts; James Beaver, new Abington Township Communications officer;

and Paul Bohlander and Elaine Shay, radiological monitors and communications specialists. Civil defense personnel in Township recently held the drill using communications equipment and communications bus where the persons pictured here are gathered.

Group to attempt television contact with space shuttle

By Jim Detjen
Inquirer Staff Writer

A new breed of ham-radio operators from the Philadelphia area will try to become the first amateurs to make video contact with a space shuttle after the scheduled liftoff of the Challenger at 4:30 p.m. today.

The television link could come as early as Monday afternoon, when the spacecraft is to pass near Philadelphia on its 47th orbit.

"If all goes well, we'll send pictures of us talking to the astronauts, and they'll send back to us pictures of themselves," said Derrick Pitts, coordinator of astronomy education programs at the Franklin Institute. "No amateur group has ever done this before."

Special antennae for the effort have been installed on the roof of the Franklin Institute, at 20th Street and Benjamin Franklin Parkway. Thirty to 35 people, including a dozen students from Northeast High School, will be camped out at the institute 24 hours a day beginning tomorrow morning and continuing through July 19, when the shuttle is scheduled to land at Edwards Air Force Base in California.

Steve Nesbitt, a spokesman for the National Aeronautics and Space Administration in Houston, said the communications experiment would involve slow-scan television.

"It won't be the moving television most people are familiar with," he said. "It will be more like transmitting a sequence of still photographs back and forth."

He said that astronauts Anthony England, a geophysicist, and John-David Bartoe, an astrophysicist, would be conducting the television experiment aboard the shuttle. He said the astronauts would be able to view transmissions from Earth on a 2-inch-diagonal color television screen.

Both England and Bartoe are ham-radio enthusiasts, and they also will be attempting radio communication with ham operators in the United States, England, Israel, Australia and Japan.

The public will be able to view the efforts of the Philadelphia ham-radio operators from 10 a.m. to 5 p.m. tomorrow and from noon to 5 p.m. Sunday, when demonstrations of space-age communications will be held at the institute's Science News Center.

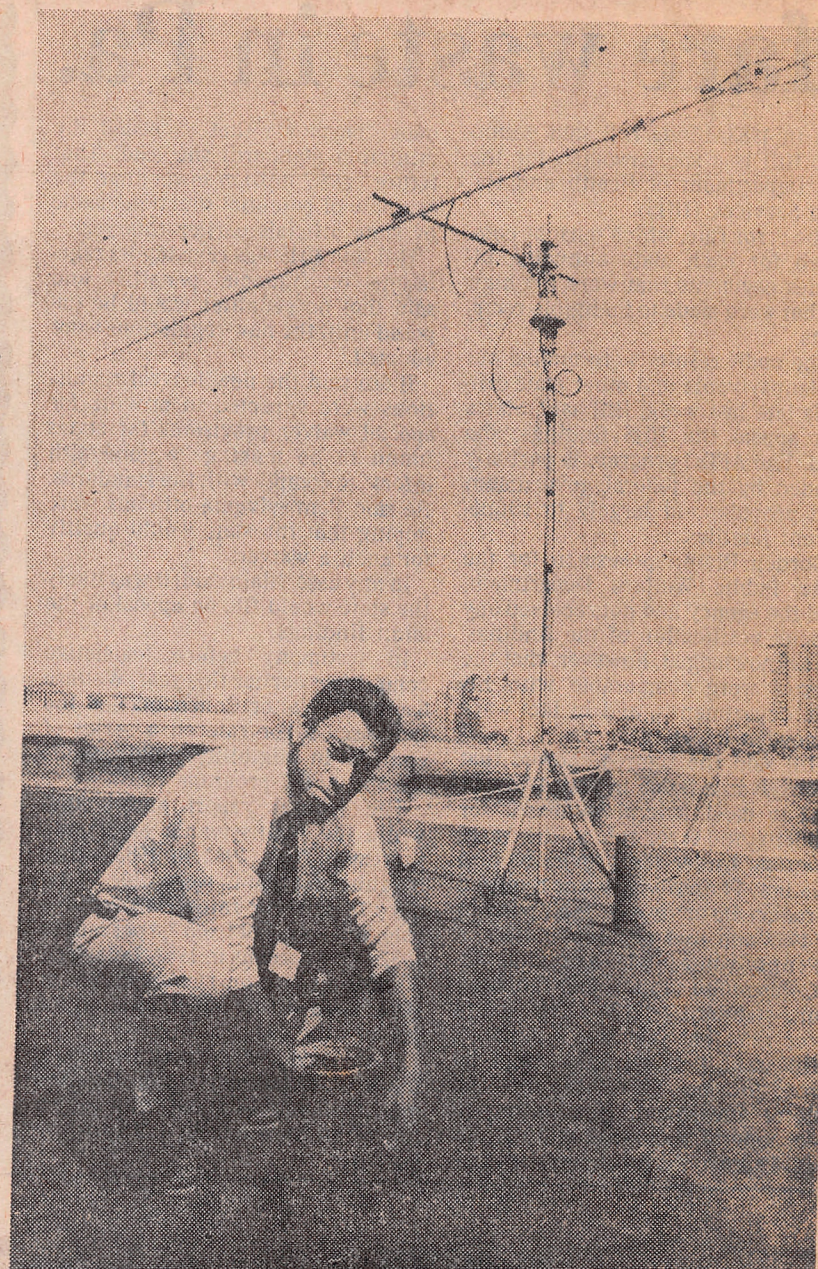
The Philadelphia ham operators probably will not be told until after the shuttle has been launched when they will be permitted to attempt video contact with the astronauts, Pitts said. But he said the shuttle would be close enough to the Philadelphia area to communicate with the radio buffs on eight different orbits. Video transmission will be possible for about eight minutes on each orbit, he said.

"Amateur radio is at the cutting edge of space-age communications, and this experiment is an example of that," he said. "Very often, it is the amateur enthusiasts who are pioneering new techniques and experimenting with new equipment."

Members of the Philadelphia Amateur Satellite Experimenters Network and the Suburban Amateur Radio Club Inc. have been involved in planning the television experiment, Pitts said.

Members borrowed a \$10,000 television camera from WCAU-TV (Channel 10) to create video images, and they scrounged together \$1,200 to buy a slow-scan television transceiver, which converts television images into radio waves for transmission.

Pitts said about a dozen students from Project SPARC at Northeast High School would be involved in the experiment. Project SPARC,



The Philadelphia Inquirer / WILLIAM F. STEINMETZ

Derrick Pitts and a special antenna atop the Franklin Institute

which stands for Space Research Capsule, is an extracurricular activity for students interested in aerospace engineering.

Gerald Mayall, director of Project SPARC, said that Howard Ziserman, a 1970 graduate of the high school, had been instrumental in organizing the television experiment. He said Ziserman also had helped reactivate

W3YC, one of the oldest high school ham-radio stations in the county.

"Space communications is a field that is going to explode in the future as the space station makes travel in space much more common," Mayall said. "It is through efforts such as the television experiment that we feel our students can get a head start in this exciting new field."